

DRAWINGS

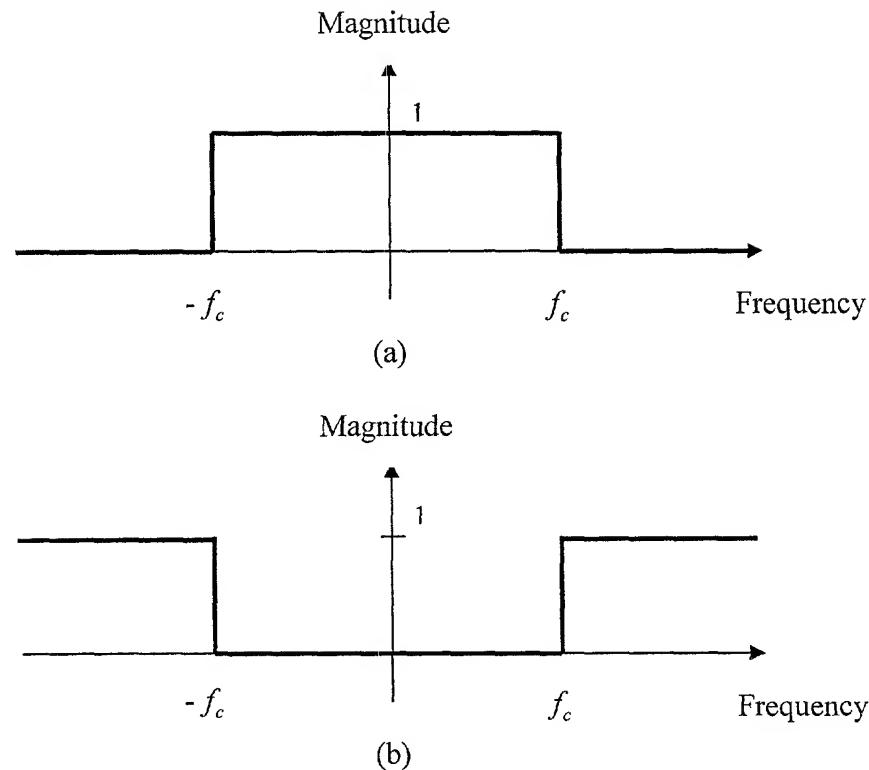


Figure 1: (a) An ideal low-pass filter to stop the broad-band signal. (b) An ideal high-pass filter to stop the voice-band signal.

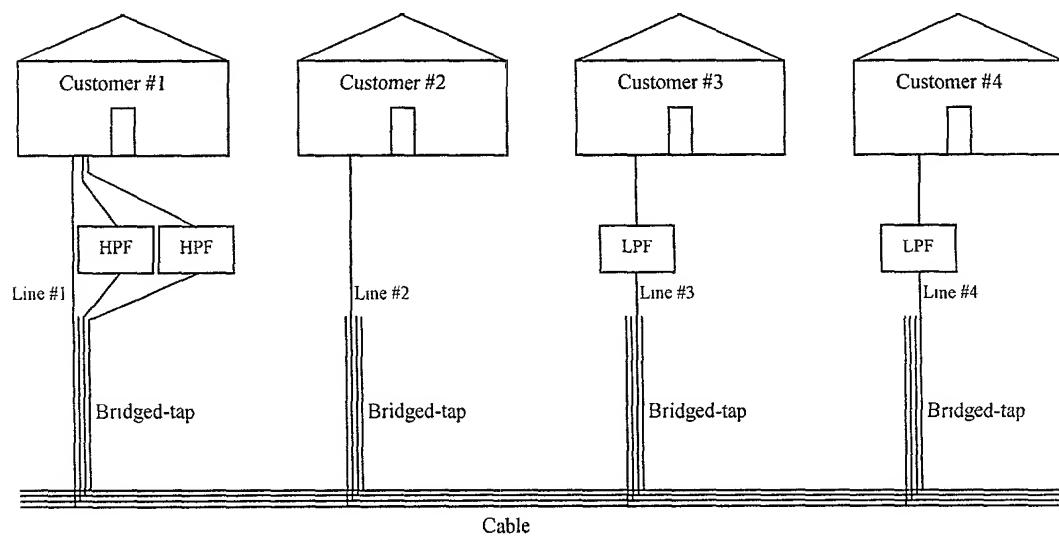


Figure 2: Assigning fat-pipe by sharing lines discussed in Example 1. Customer #1 has a fat-pipe service consisting of line #1, a high-pass filtered line #3, and a high-pass filtered line #4. Customer #2 has POTS service. Customer #3 and Customer #4 have POTS service through the low-pass filtered line #3 and low-pass filtered line #4 respectively. They both share their lines with customer #1.

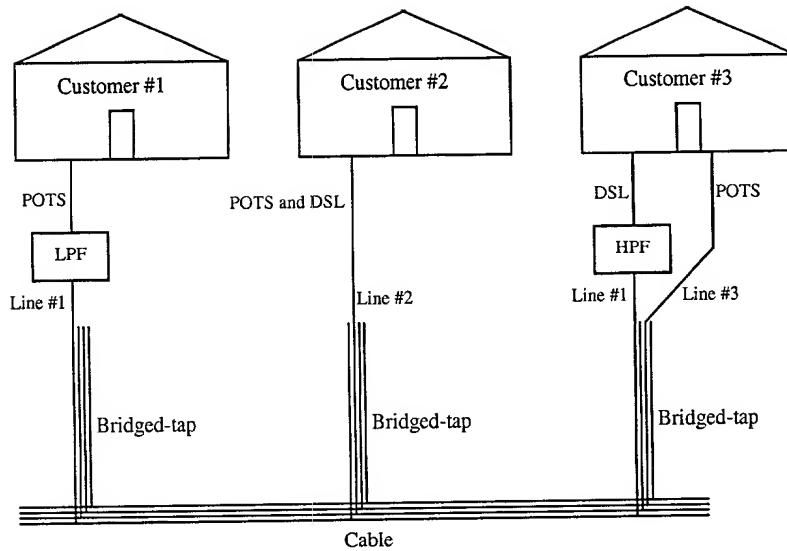


Figure 3: Assigning DSL services, using the phone lines of other POTS customers, in order to minimize crosscoupling between the DSL services, as discussed in Example 2. Customer #1 has POTS service through the low-pass filtered line #1. Customer #2 has DSL service through line #2. Customer #3 has DSL service through the high-pass filtered line #1 and shares the line with customer #1. Line #3 provides POTS for customer #3.

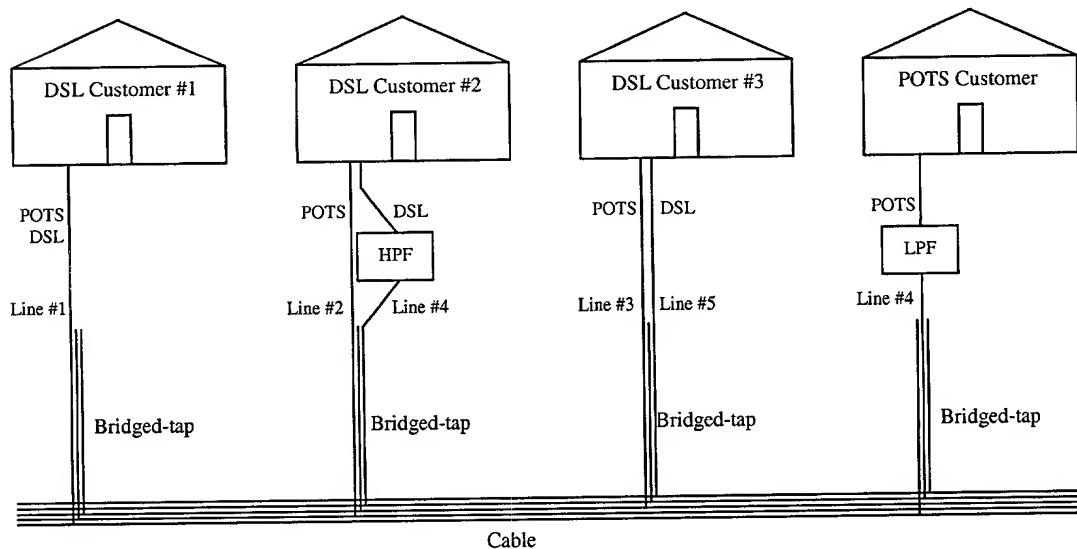


Figure 4: Optimal assignment of lines to 3 DSL customers in a neighborhood, as discussed in Example 3.

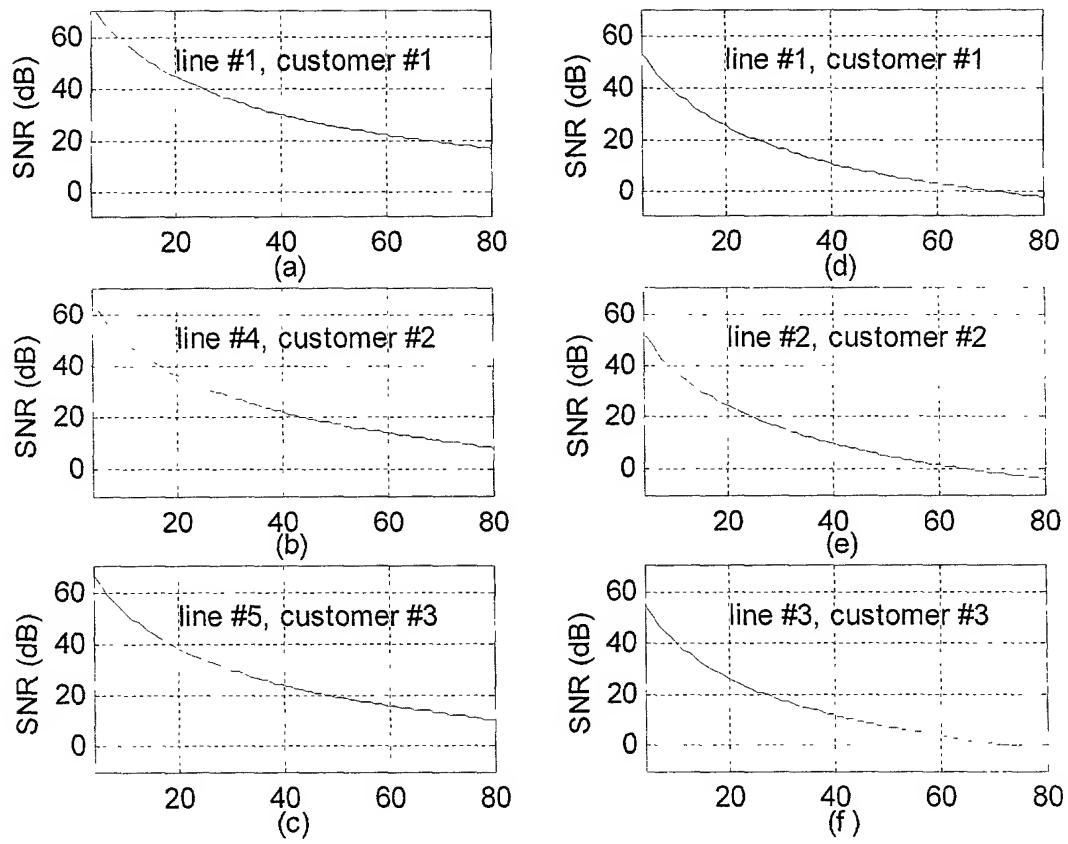


Figure 5: Downstream SNR with optimal line assignment given by (a), (b), (c), and without optimal line assignment given by (d), (e), (f), for Example 3. The vertical axis is SNR in dB and the horizontal axis is frequency in KHz.